Title (en)

METHOD AND APPARATUS FOR USING WALSH SHIFT KEYING IN A SPREAD SPECTRUM COMMUNICATION SYSTEM

Title (de)

VERFAHREN UND GERÄT ZUR SIGNALMODULATION MIT WALSH-FUNKTIONEN IN EINER SPREIZSPEKTRUMKOMMUNIKATIONSANORDNUNG

Title (fr)

PROCEDE ET DISPOSITIF D'UTILISATION D'UN DECALAGE DE FONCTION DE WALSH DANS UN SYSTEME DE TELECOMMUNICATIONS A ETALEMENT DE SPECTRE

Publication

EP 0809895 A1 19971203 (EN)

Application

EP 95943391 A 19951211

Priority

- US 9516001 W 19951211
- US 35842594 A 19941219

Abstract (en)

[origin: WO9619879A1] Method and apparatus for generating orthogonally encoded communication signals for communication system subscribers using multiple orthogonal functions for each orthogonal communication channel. Digital data symbols for signal recipients are M-ary modulated using at least two n-length orthogonal modulation symbols, which are generally Walsh functions normally used within the communication system. These symbols are provided by a modulation symbol selector (124) typically from one or more code generators (126, 128), and the modulation is such that M equals a product of a total number of orthogonal functions and the number used to generate individual modulation symbols. Each group of log M encoded data symbols from data processing elements (100, 102) are mapped into one modulation symbol using the modulation symbol selection element (124) according to their binary values. In some embodiments, a fast Hadamard transformer is used for symbol mapping. The resulting communication signals are demodulated by correlating them with the preselected number of orthogonal functions, in parallel, and demodulating the results into M energy values representing each orthogonal modulation symbol. The energy values are mapped into energy metric data using a dual maximum metric generation process. The correlation and demodulation can be accomplished using at least two sets of N correlators (142), N being the number of functions used, and applying correlated signals to one demodulator for each set of correlators (144). Each demodulator outputs M energy values representing each of the M mutually orthogonal modulation symbols, which are then combined into a single set of M energy values. In further configurations, coherent demodulators (172, 174) can be used to produce amplitude values for received signals which are then combined (178) with dual maximum metric results (170) to produce composite metric values for data symbols (178).

IPC 1-7

H04B 7/216; H04J 13/00

IPC 8 full level

H04B 7/15 (2006.01); **H04B 7/216** (2006.01); **H04J 11/00** (2006.01); **H04L 1/12** (2006.01); **H04L 27/30** (2006.01); **H04W 72/04** (2009.01); **H04W 84/06** (2009.01); **H04W 88/14** (2009.01)

CPC (source: EP US)

H04B 7/216 (2013.01 - EP US); **H04J 13/0048** (2013.01 - EP US); **H04J 13/0074** (2013.01 - EP US); **H04J 13/102** (2013.01 - EP US)

Citation (search report)

See references of WO 9619879A1

Cited by

CN105790848A

Designated contracting state (EPC)

AT BE CH DE DK ES FR GB GR IE IT LI LU MC NL PT SE

DOCDB simple family (publication)

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DOCDB simple family (application)

US 9516001 W 19951211; AT 95943391 T 19951211; AU 4467196 A 19951211; BR 9510283 A 19951211; CA 2208053 A 19951211; CN 95197674 A 19951211; DE 69528910 T 19951211; EP 95943391 A 19951211; FI 972589 A 19970617; HK 98104770 A 19980602; JP 30599499 A 19991027; JP 51984596 A 19951211; RU 97112109 A 19951211; US 35842594 A 19941219